WHAT IS CLAIMED IS:

1. A semiconductor device comprising:

a semiconductor substrate having a surface on which an insulating layer is formed;

a first-conductivity-type first semiconductor layer formed on said insulating layer and having a first impurity concentration;

a first-conductivity-type second semiconductor region formed in said first semiconductor layer from a surface of said first semiconductor layer to a surface of said insulating layer, and having a concentration higher than the first impurity concentration;

a second-conductivity-type third semiconductor region formed in said first semiconductor layer from the surface of said first semiconductor layer to the surface of said insulating layer with a predetermined distance between said second and third semiconductor regions, and having a second impurity concentration;

a second-conductivity-type fourth semiconductor region formed in a surface portion of said second semiconductor region, and having a concentration higher than the second impurity concentration;

an insulating film formed over the surfaces of said first, second, third, and fourth semiconductor layers; and

a control electrode formed on said insulating film,

wherein a junction of first and second conductivity types formed between said first semiconductor layer and said third semiconductor region is positioned below said control electrode, or below an end portion, on a side of said third semiconductor region, of said control electrode, via said insulating film.

2. A device according to claim 1, wherein a thickness of said insulting film continuously changes from the surface of said first semiconductor layer to the surface of said third semiconductor region, and a thickness of

said insulating film above the junction of the first and second conductivity types formed between said first semiconductor layer and said third semiconductor region is larger than a thickness of said insulating film above said fourth semiconductor region.

3. A device according to claim 2, wherein said insulating film is a silicon oxide film, or has a stacked structure including a silicon oxide film and silicon nitride film.

4. A device according to claim 2, wherein the junction of the first and second conductivity types formed between said first semiconductor layer and said third semiconductor region is positioned below the end face, on the side of said third semiconductor region, of said control electrode, within a range of 0 to 0.8 μm from the end face.

5. A device according to claim 2, wherein the first impurity concentration of said first semiconductor layer is not more than 1×10^{15} cm^{-3}, and the predetermined distance between said second and third semiconductor regions is not more than 0.5 μm.

6. A device according to claim 2, further comprising a first trench formed from the surface of said second semiconductor region to the surface of said insulating layer, and a second trench formed from the surface of said third semiconductor region to the surface of said insulating layer.

7. A device according to claim 6, further comprising a silicon oxide film, or a polysilicon film having no impurity doped therein, which is formed to fill said first and second trenches.

8. A device according to claim 1, wherein a portion of said insulating film positioned below said control electrode has a thickness of 50 to 150 nm in a thinnest portion, and a thickness of 150 to 450 nm in a thickest portion.

9. A device according to claim 8, wherein said insulating film is a silicon oxide film, or has a stacked structure including a silicon oxide film and silicon nitride film.

10. A device according to claim 8, wherein the junction of the first and second conductivity types formed between said first semiconductor layer and said third semiconductor region is positioned below the end face, on the side of said third semiconductor region, of said control electrode, within a range of 0 to 0.8 μm from the end face.

11. A device according to claim 8, wherein the first impurity concentration of said first semiconductor layer is not more than 1×10^{15} cm^{-3}, and the predetermined distance between said second and third semiconductor regions is not more than 0.5 μm.

12. A device according to claim 8, further comprising a first trench formed from the surface of said second semiconductor region to the surface of said insulating layer, and a second trench formed from the surface of said third semiconductor region to the surface of said insulating layer.

13. A device according to claim 12, further comprising a silicon oxide film, or a polysilicon film having no impurity doped therein, which is formed to fill said first and second trenches.

14. A device according to claim 1, wherein said insulating film is a silicon oxide film, or has a stacked structure including a silicon oxide film and silicon nitride film.

15. A device according to claim 1, wherein the junction of the first and second conductivity types formed between said first semiconductor layer and said third semiconductor region is positioned below the end face, on the side of said third semiconductor region, of said control electrode, within a range of 0 to 0.8 μm from

the end face.

16. A device according to claim 1, wherein the first impurity concentration of said first semiconductor layer is not more than 1×10^{15} cm^{-3}, and the predetermined distance between said second and third semiconductor regions is not more than 0.5 μm.

17. A device according to claim 1, further comprising a first trench formed from the surface of said second semiconductor region to the surface of said insulating layer, and a second trench formed from the surface of said third semiconductor region to the surface of said insulating layer.

18. A device according to claim 17, further comprising a silicon oxide film, or a polysilicon film having no impurity doped therein, which is formed to fill said first and second trenches.